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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,848	06/24/2003	Yoshinori Tanaka	1324.68109	9315

7590 10/05/2006

Patrick G. Burns
Greer, Burns & Crain, Ltd.
Suite 2500
300 South Wacker Drive
Chicago, IL 60606

EXAMINER	
CHEN, WEN YING PATTY	
ART UNIT	**PAPER NUMBER**
2871	

DATE MAILED: 10/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/602,848	TANAKA ET AL.	
	Examiner	Art Unit	
	W. Patty Chen	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13-15 and 17-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-15 and 17-20* is/are rejected.

7)☒ Claim(s) *21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 July 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/607104.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's Amendment filed Jul. 17, 2006 has been received and entered. Claim 21 is newly added per the Amendment filed. Therefore, claims 13-15 and 17-21 are now pending in the current application.

Drawings

The drawings were received on Jul. 17, 2006. These drawings are acceptable.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 13-14 and 18-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Koike et al. (US 5781253).

With respect to claim 13: Koike et al. disclose in Figures 1-3 an active matrix type liquid crystal display comprising:

a switching element (element 26) formed for each of a plurality of pixels defined by a plurality of bus lines (elements 10 and 46);

a short ring connected to the plurality of bus lines (Column 6, lines 8-13 and Column 2, lines 39-44; wherein short rings are formed and are connected to the bus lines through the electrostatic protection element); and

an electrostatic protection element portion (element 44) formed between each of the plurality of bus lines and the short ring;

wherein the electrostatic protection element portion comprises a plurality of metal layers (elements 52 and 54) directly formed on the same layer (as shown in Figure 3), an insulating layer (element 56) formed on the plurality of metal layers, a contact hole (element 58) formed by opening the insulating layer on the plurality of metal layers, and a connecting layer (element 48) electrically connecting the metal layers via the contact hole.

With respect to claim 14: Koike et al. disclose in Figures 1-3 an active matrix type liquid crystal display comprising:

a switching element (element 26) formed for each of a plurality of pixels defined by a plurality of bus lines (elements 10 and 46); and

an electrostatic protection element portion (element 44) formed between the adjacent bus lines;

wherein the electrostatic protection element portion comprises a plurality of metal layers (elements 52 and 54) directly formed on the same layer (as shown in Figure 3), an insulating layer (element 56) formed on the plurality of metal layers, a contact hole (element 58) formed by opening the insulating layer on the plurality of metal layers, and a connecting layer (element 48) electrically connecting the metal layers via the contact hole.

As to claim 18: Koike et al. further disclose in Figure 3 that the insulating layer (element 56) is a single layer.

As to claim 19: Koike et al. further disclose in Figure 3 that the connecting layer is a single layer (element 48).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koike et al. (US 5781253).

Koike et al. disclose all of the limitations set forth in the previous claim, but fail to specifically disclose that the connecting layer is formed by a material for a pixel electrode formed in each of the plurality of pixels.

However, Koike et al. further teach in Column 6 lines 39-44 that the connecting layer can be formed simultaneously with any of the metal layers and/or with various types of metal.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct an active matrix type liquid crystal display as taught by Koike et al. wherein the connecting layer is formed by a material for forming a pixel electrode, since Koike et al. teach that is it convenient to form the connecting layer while forming other metal layers, such that no extra deposition/patterning step is necessary (Column 6, lines 39-44).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (US 5019001) in view of Matsumoto (US 6211534).

Abe et al. disclose in Figure 3 an active matrix type liquid crystal display comprising:

a switching element (Figure 2, element 31) formed for each of a plurality of pixels defined by a plurality of data bus lines and gate bus lines (Column 4, lines 10-20);

a first common wiring (element 72) connected to the data bus lines (element 48);

a second common wiring (element 70) connected to the gate bus lines; and

an electrostatic protection element portion (element 82) formed between the first common wiring and the second common wiring.

Abe et al. fail to specifically disclose the structure of the electrostatic protection element portion.

However, Matsumoto discloses in Figures 2-4 an electrostatic element portion (element 11) comprises a plurality of metal layers (elements 4 and 7) directly formed on the same layer as the first common wiring or the second common wiring (wherein the metal layers are formed on the same layer as the second common wirings which connect to the gate bus lines), an insulating layer (element 29) formed on the plurality of metal layers, a contact hole formed by opening the insulating layer on the plurality of metal layers (as shown in Figure 3), and a connecting layer (element 27a) electrically connecting the metal layers via the contact hole.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct an active matrix type liquid crystal display as taught by Abe et al. wherein the electrostatic protection element portion has the structure as taught by Matsumoto, since Matsumoto teaches that by forming the electrostatic protecting element portion with such structure helps to suppress leak current by supplying large resistance, thus helps to prevent damages to the array substrate due to abnormal discharge of current (Column 10, lines 9-13 and Column 3, lines 48-67).

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimomaki et al. (US 6678017) in view of Gardner (US 5444022).

Shimomaki et al. disclose in Figure 1 an active matrix type liquid crystal display comprising:

a switching element (element 8) formed for each of a plurality of pixels defined by a plurality of bus lines (elements 9 and 10);

an electrostatic protection element (elements 13, 14) having a multi-layer structured metal layer (Figure 6, elements 55-57);

an insulating layer (Figure 8, element 41) formed on the metal layer;

a contact hole (Figure 8, element 63) formed by opening the insulating layer on the metal layer; and

a connecting layer (Figure 8, element 67) electrically connecting the metal layers via the contact hole.

Shimomaki et al. fail to disclose that the multi-layer structured metal layer comprises a top layer which is partially removed and an under layer directly below the top layer is exposed such that the connecting layer is connected to both the top layer and the under layer of the metal layer wherein a contact resistance between the connecting layer and the metal layer can be increased.

However, Gardner teaches in Figure 3e a multi-layer structured metal layer (element 312) is formed of a top layer and an under layer such that the top layer is partially removed and the under layer below the top layer is exposed and both layers connected to the connecting layer (element 317) and wherein a contact resistance between the connecting layer and the metal layer can be adjusted to increase or decrease (Column 7, lines 4-13).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a liquid crystal display device as taught by Shimomaki et al. wherein the top layer which is partially removed and an under layer directly below the top layer is exposed such that the connecting layer is connected to both the top layer and the under layer of the metal layer as taught by Gardner, since Gardner teaches that by forming a multi-layer structured metal layer having the specific connection configuration results in a reliable, low resistivity, high performance, high density connection structure (Column 8, lines 1-18).

Allowable Subject Matter

Claim 21 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

None of the prior arts either alone or in combination fairly teach or suggest that the contact resistance through the contact hole on a multi-layer structured metal layer is equal to 35 to 36 kΩ.

Therefore, claim 21 is deemed non-obvious and inventive over the prior arts, thus is allowable.

Response to Arguments

Applicant's arguments, filed Jul. 17, 2006, with respect to the rejection(s) of all claim(s) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn.

However, upon further consideration, a new ground(s) of rejection is made in view of Koike et al., Abe et al., Matsumoto and Gardner as set forth above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. Patty Chen whose telephone number is (571)272-8444. The examiner can normally be reached on 8:00-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571)272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

W. Patty Chen
Examiner
Art Unit 2871

WPC
9/29/06

ANDREW SCHECHTER
PRIMARY EXAMINER